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DEPARTMENT OF MINES.

Geological Survey of Queensland.

(B. DUNSTAN, F.G.S., CHIEF GOVERNMENT GEOLOGIST.)

PUBLICATION No. 258.

THE COAL MEASURES AT OXLEY CREEK, HUGHENDEN DISTRICT.

WITH 3 PLATES AND 6 TEXT FIGURES.

BY

J. H. REID, A.S.T.C.,

GOVERNMENT GEOLOGIST.

BRISBANE:

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THE COAL MEASURES AT OXLEY CREEK, HUGHENDEN DISTRICT.

By J. H. REID, A.S.T.C., Government Geologist.

Introduction.

The coal which is the subject of this report outcrops in Oxley Creek and in a tributary called Dingo Creek. Oxley Creek is one of the principal headwaters of the Flinders River. The actual outcrops occur below its junction with White Mountain Creek and above its junction with the Flinders River. This locality is situated approximately as follows:—52 miles north-east of Hughenden, 42 miles west-north-west of Pentland, and 34 miles north-west of Torrens Creek, all railway stations on the Great Northern line. Torrens Creek is about the nearest point of the railway line. These distances are arrived at by measuring according to scale on the Queensland Four-mile Map, Sheet 15A, and therefore represent direct distances. There are no roads to the area, which is at present rather inaccessible, but there is a track used by the prospectors leaving the Pentland-Mount Emu road at about 45 miles from the former place. The distance by the track from the road is about 9 miles. The coal outcrops appear to be situated in the south-eastern corner of Mount Emu Plains Station.

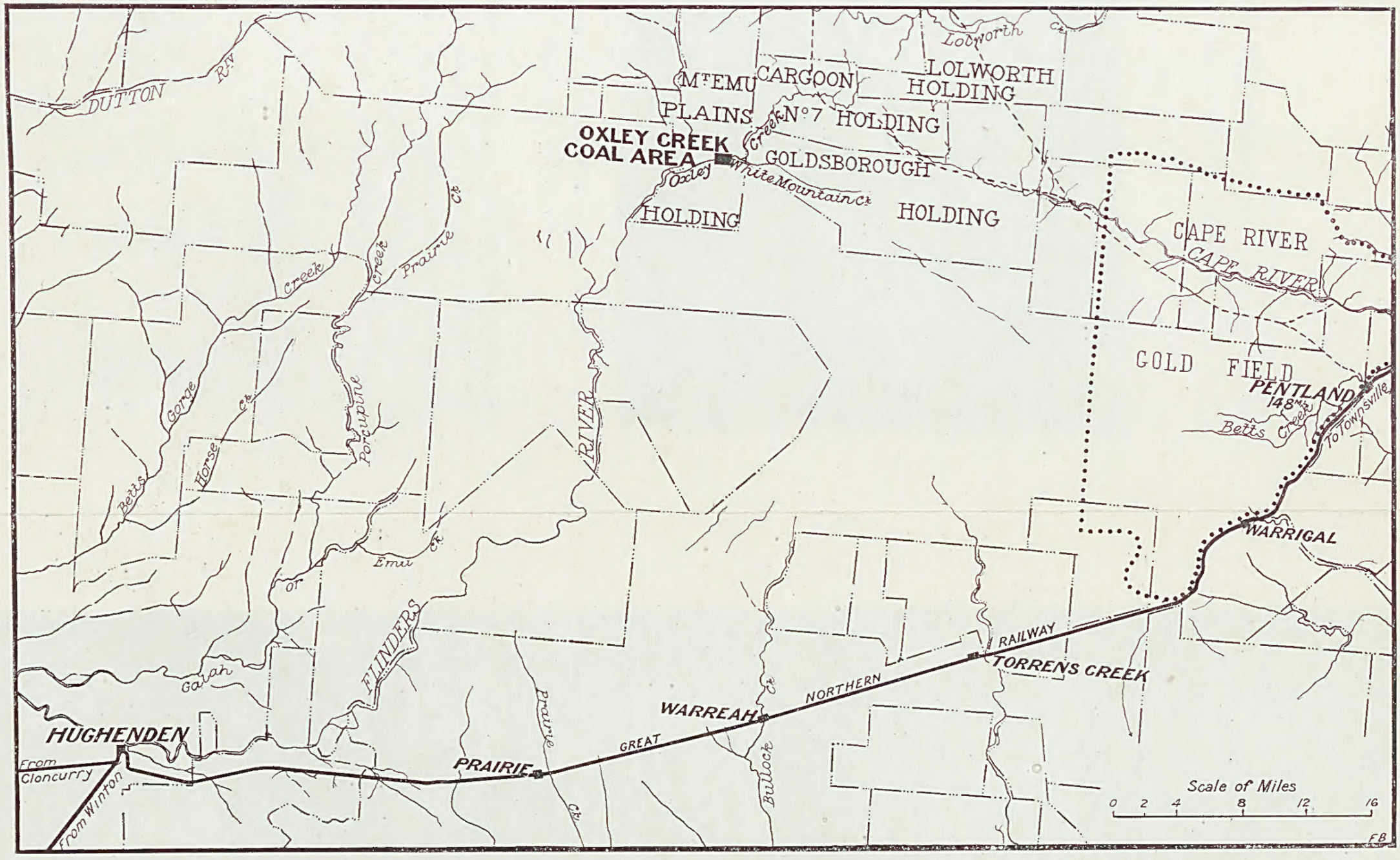
Messrs. W. H. Shetland and A. Wilson discovered coal outcropping in Dingo Creek about the latter end of August, 1915, while exploring and shooting. Being in a secluded spot, it is possible that these outcrops had not been previously observed, but other outcrops of the same seam in Oxley Creek appear to have been known for some years, Mr. P. Sachse, formerly of Goldsborough Station, having stated that many years and he had noticed coal near Oxley Creek. No work appears

to have been done until Messrs. Shetland and Wilson, hunted out by drought from their gold mine higher up Oxley Creek, found the coal in Dingo Creek, as before stated. The country around the outcrops was eventually taken up under coal prospecting area No. 10, area 2,640 acres.

The top of the coal seam is exposed along the bank of Dingo Creek, and a shallow shaft (No. 1) was sunk alongside of it in the bed of the creek, which was then dry, and about 8 ft. of coal was found in this shaft. A few chains to the east No. 2 shaft was sunk 9 ft. on the same seam of coal. During last summer No. 3 shaft was sunk on the south bank of the creek to test the seam at a greater depth. This shaft at 14 ft. struck the top of a 5-ft. seam of very inferior shaley coal, containing ironstone bands, and at 50 ft. cut the big seam which outcropped on the creek bank near No. 1 shaft. The shaft was continued to 66 ft. before striking sandstone, and no further sinking was done. The figures given of this shaft are those of the prospectors. I measured 14 ft. of coal, including bands, at the bottom of this shaft, but the measuring was done under difficulties, hanging to a rope. The country around here has been thoroughly explored by the prospectors, and several outcrops have been found within short distances of the outcrops near the shafts. They have all proved to be continuations of the seams met with in No. 3 shaft.

A map of the area has been prepared partly by using the plane table but the traverses along the creeks were run with a prismatic compass. These were closed on the datum peg of the prospecting area No. 10 and the shafts in Dingo Creek. On this map the geological data, much of which were obtained from many offsets from the traverses, were plotted. The natural exposures of the strata were very good, and enabled a satisfactory sequence of the coal measures to be obtained. The best portions of the coal seam in Nos. 2 and 3 shafts were sampled for analyses.

Reference to the sections illustrating this report will give a good impression of the nature of the topography. Dingo Creek runs through a precipitous gorge and along the foot of an almost vertical wall of sandstone 300 ft. high into Oxley Creek. Near this wall most of the outcrops of coal appear. The mural escarpments of sandstone form part of what are known as the White Mountains, which stretch away south-east towards Pentland and south and south-west towards Hughenden. The



LOCALITY PLAN, OXLEY CREEK COAL AREA.

[Face p. 2.

coal is dipping under the White Mountains. Coming towards Oxley Creek the country rises to usually 70-to 100 ft. above the

Fig. 1.

Outcrop of Coal Seam in Dingo Creek at No. 1 Shaft.
Top of Seam only Showing.

creek bed, but it is much more open towards the north-east, where it rises gently but steadily to the main divide. The distance from Oxley Creek at the coal to the divide would be about 10 miles and the rise in altitude about 500 ft. to the crossing at Mount Emu road. The following aneroid levels (corrected) may be useful:—

—	Approximate Elevation above Pentland.	Approximate Elevation above Sea Level.
	Feet.	Feet.
Pentland	0	1,318*
Reardon's House, Upper Cape road	160	1,480
Top of Main Divide, Mount Emu road ..	1,040	2,360
Shetlands Camp, Oxley Queen Mine	780	2,100
Oxley Creek at Camp	542	1,860
Top of Sandstone Escarpments above Coal ..	810	2,130

* Official height of Railway Station.

To the west Oxley Creek flows through a gorge of horizontal sandstones rising to 300 ft. above the creek bed for about 2½ miles, where it joins the Flinders. Here and to the north the sandstone is capped by basalt, and the country is of a rugged and precipitous nature. Due north of the coal area the country is occupied by schists and is more open, but flat topped basaltic ridges cover it in parts.

The rough country to the south and west would prevent any transport route to Torrens Creek or Hughenden, and the only possible route for a road to the railway appears to be *viâ* the Mount Emu road to Pentland. If occasion arose a road could be marked out and formed to join the Mount Emu road near the crossing of the Main Divide without difficulty, and the distance by such a route from the coal deposits to Pentland would probably be from 50 to 54 miles.

Geology.

(*a*) metamorphic series.

The oldest rocks of the area shown on the map are the mica-schists. On the northern bank of Oxley Creek they outcrop at a distance of a little more than half a mile north of the coal seams in Dingo Creek. They appear to stretch away to the north for many miles, and are in places covered by flat-topped hills composed of basalt. The schists can also be traced north-east and east to the Main Divide, and are thus a continuation of the series so extensively developed over the Cape River Goldfield and Betts Creek. The age of this series is not definitely known, but Mr. Rands* states they are the oldest rocks of the district (Cape River). Their strong folds, plications, and schistose character indicate they are considerably older than the Permo-Carboniferous coal measures. At Oxley Creek the observations of their strike ranged from 132 degrees to 160 degrees east of north, and the angles of dip 42 degrees to 47 degrees in a direction north-easterly to east-north-east. They lie unconformably beneath the Permo-Carboniferous series at Oxley Creek, this relationship being best seen on the eastern bank of Oxley Creek about 500 yards above its junction with White Mountain Creek. The schists dip to the north-east and Permo-Carboniferous sandstones dip towards the south at an angle of 32 degrees.

* On the Cape River Goldfield, 1891. W. H. Rands, Geol. Sur. of Queensland Publ. No. 73.

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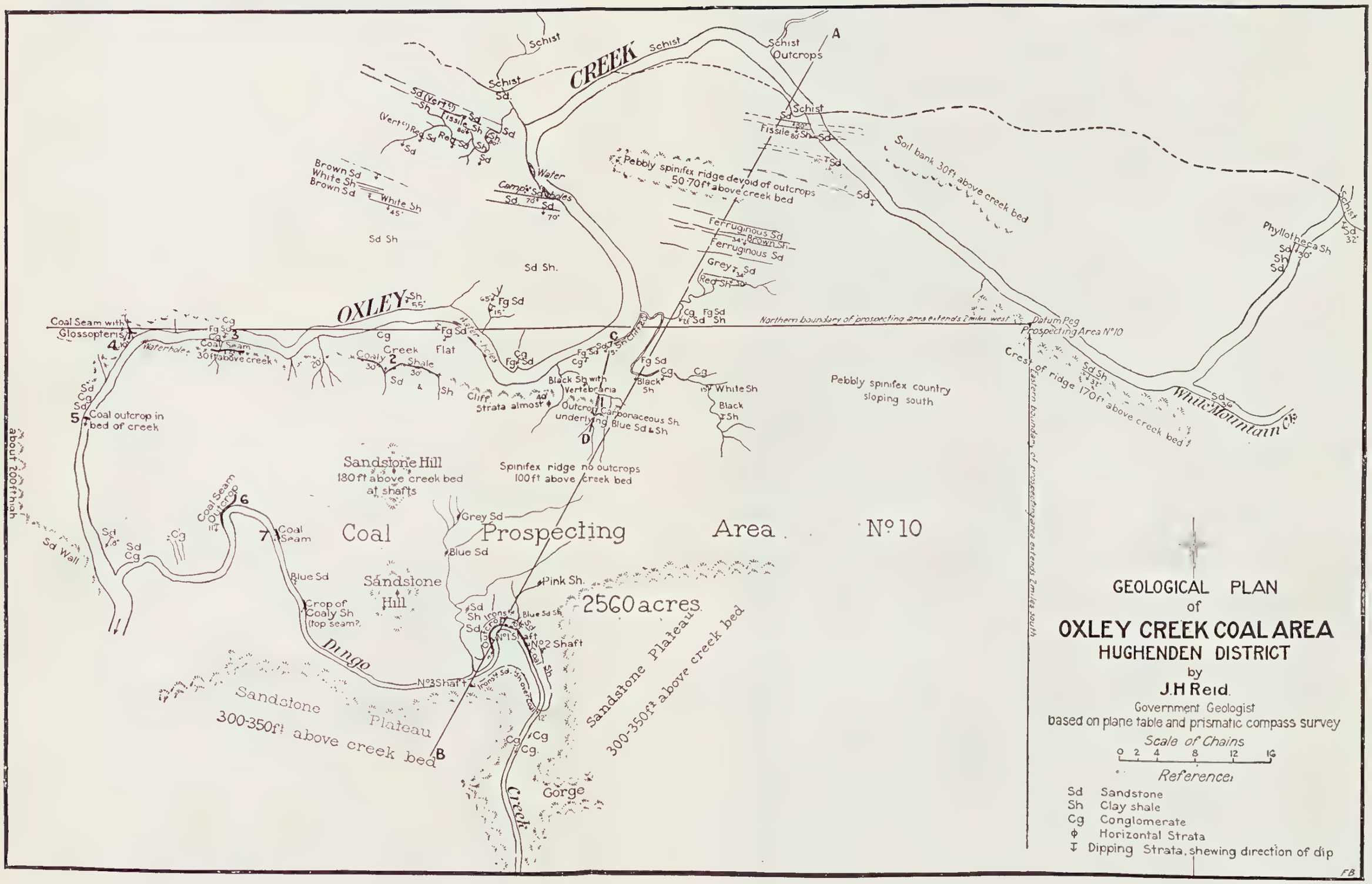


GEOLOGICAL PLAN of OXLEY CREEK COAL AREA HUGHENDEN DISTRICT

by

J.H Reid.

Government Geologist

based on plane table and prismatic compass survey

Scale of Chains

0 2 4 8 12 16

Reference

Sd Sandstone
Sh Clay shale
Cg Conglomerate
Φ Horizontal Strata
↧ Dipping Strata, shewing direction of dip

FB

Face p. 4]

(*b*) PERMO-CARBONIFEROUS SYSTEM.

As stated, rocks of this system lie unconformably on the schists. They consist of sandstones mainly, with interbedded clay shales and conglomerates, and contain at least two seams of coal. The clay shales and coal seams furnished numerous specimens of *Glossopteris, Vertebraria,* and *Phyllotheca,* which hitherto have not been recorded from this locality. The strike of these beds is uniformly a few degrees south of east and the dips to the east of south. These beds show every variation in attitude between the vertical and horizontal. Close to the contact with the schists the beds are exposed standing on end for some distance, but they become flatter towards the south and for some distance are apparently quite horizontal. The angles of dip are constantly changing as the series is followed south from the schists, but no reverse dips were observed. These beds will be described in detail under the heading of Coal Measures.

(*c*) JURASSIC SYSTEM.

Overlying the Coal Measures is a thickness of 300-400 ft. of white to yellowish sandstones. They form almost vertical escarpments to the south of the Coal Measures, and these escarpments can be traced by the eye to the east and west for many miles. No palæontological evidence of their age was found. The sandstones are rather coarse and loosely cemented, and there is little variation in their texture throughout the whole thickness beyond becoming pebbly occasionally. They are horizontal in places, but on the south side of Dingo Creek and near its junction with Oxley Creek it can be seen in the cliff sections that they are dipping slightly in a general south-westerly direction. The angle of dip would, perhaps, be 7 degrees to 10 degrees. It is, however, much steeper in Oxley Creek just below the junction of Dingo Creek. These sandstones in the area shown on the map appear to be conformable with the Coal Measures, as there are several residuals horizontally bedded lying on the Coal Measures where they are flat, and, as far as can be judged by the eye from the cliff sections, they dip at an angle and direction which must closely approximate with the Coal Measures immediately underneath.

About 3 miles to the south-east, however, in a tributary of White Mountain Creek, the sandstones of the White Mountains are seen to be resting at a low angle on almost vertical beds of the Permo-Carboniferous system. Therefore, despite the apparent conformity at Oxley Creek the sandstones of the cliffs

really belong to a more recent formation, and there is little doubt that they are a continuation of the "Desert" Sandstone overlying the Permo-Carboniferous beds at Betts Creek, which are situated about 34 miles south-east of the Oxley Creek Coal Measures, and which it is now thought may be part of the Walloon Series recently classified as Jurassic.

(*d*) IGNEOUS ROCKS.

In the area mapped no evidence was seen of igneous rocks, but to the north and north-west basalt as a lava-flow overlies the schists, while on the Flinders it overlies the Jurassic sandstones. It is almost certain that the coal seams in the vicinity of Oxley Creek have not been affected in any way by intrusive dykes or flows. This is an important consideration as regards further prospecting work.

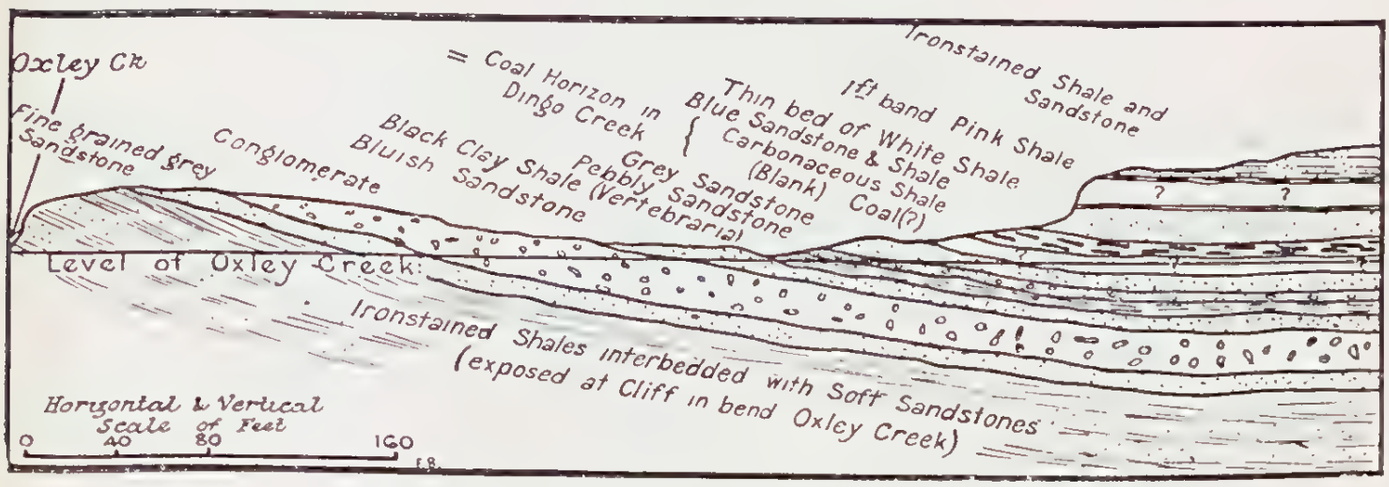
THE COAL MEASURES.

It is suggested that the vertical sections accompanying this report be consulted when reading this section, as it will at once give a clear idea of the structure of the formations associated with the coal as well as the sequence of strata.

The lowest strata exposed abut vertically against the schist boundary to the north of Oxley Creek. Proceeding in a southerly direction all the rocks exposed to the base of the sandstone cliffs belong to the Coal Measures, and from being vertical to the north the dip becomes flatter until for some distance they lie quite flat before assuming a gentle dip again, which carries them under the White Mountain sandstone cliffs. The estimated thickness of the Coal Measures which are exposed is about 1,300 ft. The lowest beds are sandstones, but overlying these is a stratum of fissile clay shales. These have apparently been indurated by crushing, and they form a very distinct horizon observed in two separate localities. Above these lie successive beds of sandstones with narrower beds of clay shales interbedded with them. These beds are about 1,140 ft. thick, and outcrop on both sides of Oxley Creek within 400 yards of the schist boundary. Good natural sections are exposed at many different points along the banks, from which a very satisfactory sequence of the strata can be formulated. There are no indications of coal seams occurring in these sandstones or clay shales. It is in the upper 160 ft. of the sediments of the Coal Measures that the coal seams occur and these are shown in detail in Section C D. These beds outcrop almost entirely to the south of the northern boundary line of prospecting area No. 10, as shown

on the map. A very fine-grained white sandstone outcrops freely in and about Oxley Creek below the double bend in that

Fig. 2.



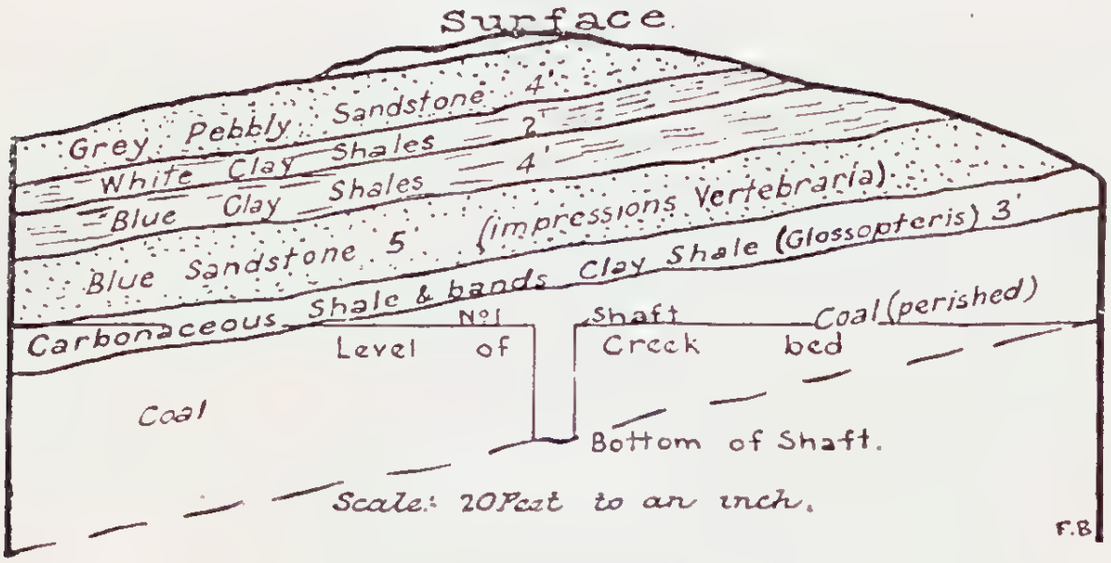
Section Along Line C D on Plan.
SHOWING DETAILED SEQUENCE OF STRATA NEAR COAL HORIZON.

creek, and is always overlain with conglomerate. The former is a valuable index bed on account of the way it weathers in smooth rounded surfaces, due to its fine grain. It proved to be an excellent grinding stone. Above it lies about 20 ft. of conglomerate exposed along the south bank of Oxley Creek and in the tributary gully to the east of the bend.

Sandstones with black and grey clay shales containing *Vertebraria* succeed and are in turn overlaid with the big coal seam which is exposed at a great many points along Oxley Creek and also in Dingo Creek. Above the coal seam is the blue sandstone and shale—another individually distinct horizon for determining the position of associated beds. The sequence above the coal is to be seen in the cliff section above No. 1 shaft and at the coal outcrop about 20 chains further west in Dingo Creek. Above the blue sandstone and shale in Dingo Creek the order ascending is white shale 2 ft., grey pebbly sandstone 4 ft., a blank of about 6 to 10 ft. containing the upper coal seam with 5 ft. of inferior coal (intersected in No. 3 shaft), a band of pink clay shale (exposed in gully north of No. 2 shaft), and a thick bed of iron-stained sandstone and shale, which outcrops above No. 2 shaft and again at the collar of No. 3 shaft at a lower level. This outcrop is shown on the map. It was at first thought that the outcrops of coaly shale or perished coal in Oxley Creek belonged to a lower seam than the big seam exposed in Dingo Creek. The geological evidence proves it to be the same. In the first place the seam exposed at No. 1 and No. 2 shafts, although dipping west of south at a low angle, is seen

in a breakaway of the north bank of Dingo Creek to have become flat. Between this point and the seam outcrop No. 1, near Oxley

Fig. 3.



Cliff Section Exposed at No. 1 Shaft.

Creek, all the observations show the beds to be so flat that no dip could be measured. The beds at outcrop No. 1 are dipping west of south slightly (about 5 degrees to 8 degrees), but the overlying beds show they are becoming horizontal at that point.

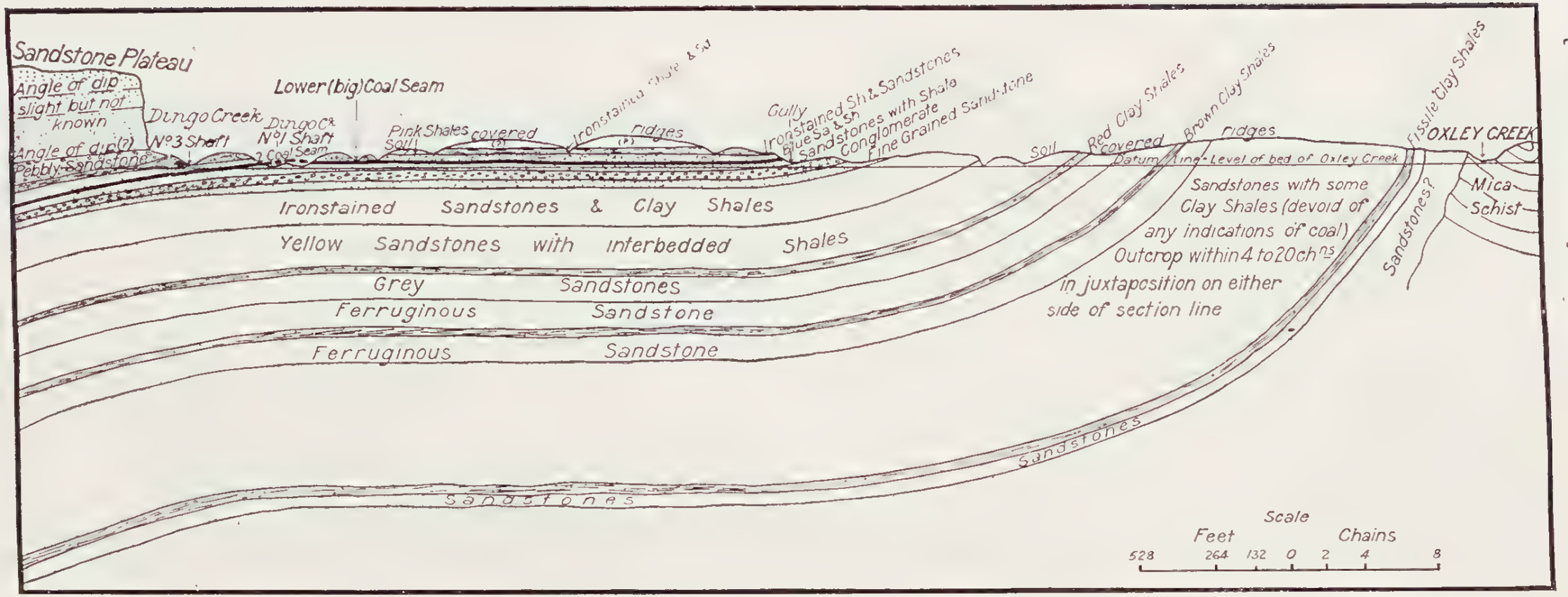
The two sections following show how closely the strata associated with the coal horizon at each point may be correlated:—

Dingo Creek at No. 1 and No. 2 Shafts.	Outcrop No. 1 near Oxley Creek.
Ironstained shale and sandstone	Ironstained shale and sandstone
1 ft. pink clay shale	1 ft. pink clay shale
7 ft. 10 in. blank containing top coal seam 5 ft.	10 ft. (?) blank
4 ft. grey pebbly sandstone	
2 ft. white clay shale	3 ft. white clay shale
4 ft. blue clay shale (sandy)	16 ft. blue sandstone and shale
5 ft. blue sandstone	
15 ft. coal seam including bands	5 ft. coaly shale with bands of white clay shale
	6ft. blank (bottom of coal seam ?)

Coal outcrops Nos. 5, 6, and 7, are almost in a direct line with the outcrop at No. 1 shaft following the strike of the seam, and they are outcrops of the same seam. The following section is seen in the bank of creek at No. 6 outcrop:—

Ironstained shale covering—
- 8 ft. soil
- 6 ft. grey sandstone
- 2 ft. blue laminated clay shale
- 10 ft. blue shaley sandstone
- 15 ft. coal (perished) coaly shale with clay shale bands
- 4 ft. blue clay shale

This is almost identical with section at No. 1 shaft.



VERTICAL SECTION ALONG LINE A—B OF PLAN.

[Face p. 8.

Q'land Geol. Survey, Pub. 258. Plate 3.

No. 5 outcrop is exposed in the bed of Oxley Creek, and is 45 ft. lower in level than No. 4 outcrop on the northern bank of the creek. The seam can be traced part of the distance between them, and from the blue sandstone overlying it can be seen that both outcrops are on the same seam. On the south bank the same seam is picked up at No. 3 outcrop, and can be traced at intervals most of the way to outcrop No. 1. The outcrops of the seam can thus be linked up this way, confirming the comparison of the two sections just quoted. The top seam does not appear to show any natural outcrops. It was intersected in the No. 3 shaft, and with bands is apparently about 5 ft. thick, but it is said to be of very poor quality.

Part of this shaft is timbered, and below the timber the nature of the walls was difficult to determine, particularly as the descent was made on a rope attached to a windlass. The section exposed in the shaft could not, therefore, be measured, but the following is a record kept by Mr. W. H. Shetland when sinking the shaft:—

	Surface	
	14 ft. clay slate	
5 ft. 4 in.	2 ft. coal	Upper coal seam
	5 in. ironstone band	
	1 ft. coal	
	5 in. ironstone band	
	1 ft. 6 in. coal	
	31 ft. sandstone and shale	
16 ft. 6 in.	4 ft. 6 in. coal and shale	Lower coal seam
	2 ft. 6 in. coal	
	3 in. ironstone band	
	4 ft. coal	
	3 in. ironstone band	
	5 ft. coal	

The angles of dip of the strata show great variations. The possibility of the steeply dipping beds being unconformable beneath the flatter beds was not overlooked, but it is not likely, as the direction of strike of both are generally closely identical and in one section a very sharp fold was seen. This is in a gully on the north bank of Oxley Creek below the double bend, and the fine-grained sandstone (noted as an index bed) is seen to change its dip very suddenly from an angle of 65 degrees to one as low as 15 degrees. This is held to account for the other sharp changes in dip just to the west which are recorded on the map and which appeared difficult to explain other than by faulting or unconformability.

The lowest horizon in which any fossils were found is a bed of clay shales exposed about 4 chains below the schist and sandstone contact in Oxley Creek and above its junction with White

Mountain Creek. Well preserved stems of *Phyllotheca* were found most abundantly in these shales. From its position this bed appears to be one of the lowest in the Coal Measures exposed in the area.

Vertebraria and *Glossopteris* were found in the big coal seam at No. 1 shaft and outcrop marked No. 4. They are very poorly preserved and are mostly in a brittle carbonised state. *Glossopteris* was found in pink shales at a point (not shown on the map) about 500 yards east of No. 1 shaft. It is thought from its position and the unusual colour of the shale to be a continuation of the bed of pink shales shown in the sections as overlying the coal seam. These fossils determine the age of the Coal Measures as Permo-Carboniferous.

The Lower (Big) Coal Seam.

It is only from this seam that there appears to be any prospects of obtaining coal of a quality and in sufficient quantity to warrant further prospecting work. The most northerly exposures—*i.e.*, along Oxley Creek—are not very good. The section exposed at No. 4 outcrop is as follows:—

Covering—White clay shale
4 in. coaly shale
clay shale parting
5 in. coaly shale
1 in. clay shale band
10 in. coaly shale
1 in. clay shale band
5 in. coaly shale
shale parting
3 in. coaly shale
(?) Carbonaceous shales with *Glossopteris* and *Vertebraria*.

Dip of beds 10 degrees in direction 12 degrees west of south.

This is evidently the top of the seam.

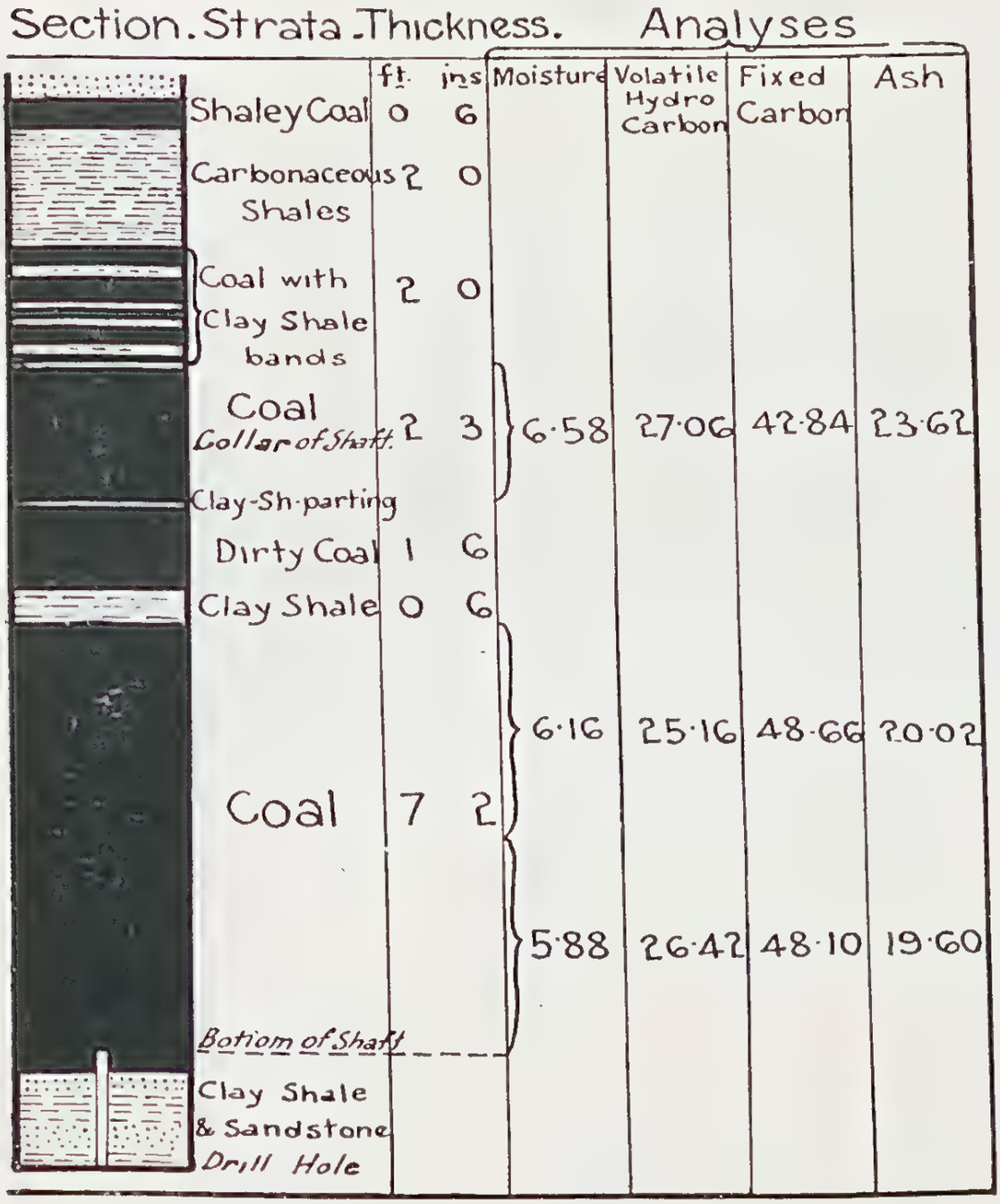
In the outcrop running along the south bank of Oxley Creek from 2 to 6 ft. of coaly shale is exposed, but it is assumed that much of the seam is hidden by soil.

At No. 1 outcrop 5 ft. of carbonaceous and white clay shales are seen resting underneath the blue sandstone, this being identical in appearance with that seen overlying the coal seam at No. 1 shaft. Under these is a blank, covered by soil, representing a thickness of about 6 ft. The evidence is not conclusive as to the thickness of the seam in Oxley Creek, but from this section there is reason to believe that the seam increases in size towards Dingo Creek.

The No. 1 shaft is said to have proved a thickness of 16 ft., including the top clay shale bands.

The section at No. 2 shaft was measured in detail and is the most reliable available.

Fig. 4.



Section of Coal Seam at No. 2 Shaft, Dingo Creek.

The total thickness of the seam there is 15 ft. 11 in. At the bottom of the seam is a thickness of 7 ft. 2 in. of coal without bands. It has a rather dull and stony appearance, and the ash percentages shown in the analysis are a good deal above those in Queensland coals at present being worked. The upper 9 ft. of the seam does not give much promise owing to the numerous bands and the poor quality appearance of the coal.

In the bottom of No. 3 shaft the seam is at least 14 ft. thick. No driving has been done on the seam. Corresponding to the seam in No. 2 shaft there is 8 ft. of coal without bands in the bottom portion of the seam, the coal over this being also poor and mixed with clay shale bands. The 8 ft. of coal was sampled in two sections of 4 ft. each, the analyses representing these being Nos. 4 and 5 in the following table:—

No.	Particulars of Sample.	Moisture.	Volatile Hydro-Carbons.	Fixed Carbon.	Ash.
		Per cent.	Per cent.	Per cent.	Per cent.
1	No. 2 shaft. Average of top 3 ft. 6 in. section of 7 ft. seam	6·16	25·16	48·66	20·02
2	No. 2 shaft. Average of bottom 3 ft. 6 in. section of 7 ft. seam	5·88	26·42	48·10	19·60
3	No. 2 shaft. Average of 2 ft. 3 in. seam at collar of shaft	6·58	27·06	42·84	23·62
4	No. 3 shaft. Average of top 4 ft. section of 8 ft. seam	7·48	20·63	41·15	30·74
5	No. 3 shaft. Average of bottom 4 ft. section of 8 ft. seam	8·22	25·24	48·96	17·58

Analyses by P. Mansini.

The dip of the seam in Dingo Creek at No. 1 shaft is 8 degrees (1 ft. in 7) in a direction about 10 degrees west of south, so that No. 3 shaft is almost on the line of the true dip drawn from No. 1 shaft.

Two further outcrops of this coal seam occur lower down Dingo Creek, both of which are marked on the map. No work, however, has been done. At No. 6 outcrop 15 ft. of perished coal and coaly shale containing clay shale bands are exposed. The angle of dip here was measured as 11 degrees.

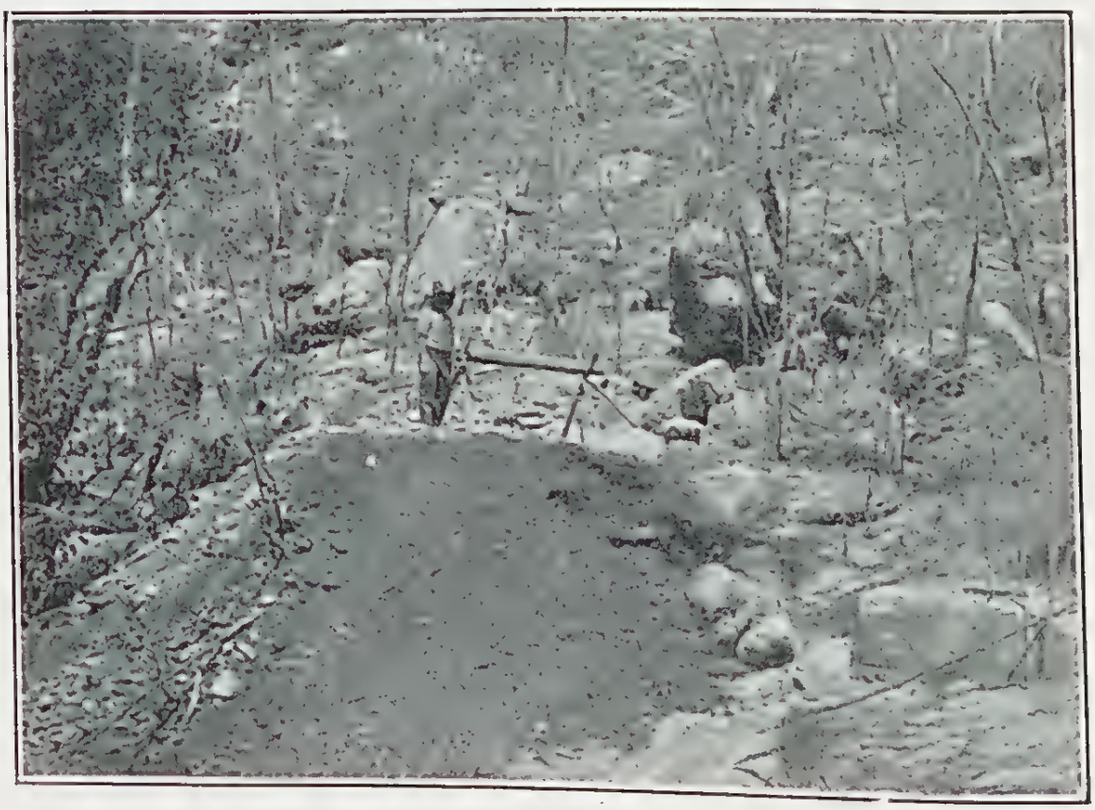
Prospects of the Field.

Although little work has been done, the surface evidence justifies further prospecting to prove the value of the seam. At two points, 7 chains apart, the work done has shown the existence of a thickness of coal from 7 ft. to 8 ft. without bands, and it is from this portion only of the seam that there appears to be any prospects of obtaining large quantities of coal of suitable quality for commercial uses.

The percentage of ash, as shown in the analyses, indicates that the coal at the surface is too inferior in quality to compete in the markets with other coals at present being worked. It has, however, been only prospected to a depth of 35 ft. below

the surface, as at No. 3 shaft the collar is about 15 ft. above the bed of Dingo Creek; and considering that at No. 2 shaft, practically on the surface, the thickness of 7 ft. of coal only averages 19·81 per cent. of ash where it has been exposed to

Fig. 5.



No. 3 Shaft, Dingo Creek.
Depth 66 ft. Intercepted Big Coal Seam at 50 ft.

oxidization and probably to some infiltration of extraneous matter which may increase the ash percentage, testing at some greater depth appears to be warranted. In No. 3 shaft, the bottom 4 ft. of coal contained 17·58 per cent. of ash.

About 14 per cent. may be assumed as the maximum percentage of ash in coal which could be worked in Queensland at the present time, other conditions such as market and freight being favourable; and if this seam showed improvement in that respect it may prove a valuable adjunct to the coal resources of North Queensland. A seam averaging 7 ft. 6 in. thick would contain about 13,600 tons of coal to the acre, or over 8,000,000 tons to the square mile, and if the dip be assumed to continue at 8 degrees, the angle at the shafts in Dingo Creek, this would probably be available at a depth not exceeding 800 ft. in the vicinity of Dingo Creek. Drilling would probably prove the continuation of the seam laterally—*i.e.*, along the strike of the

seam—thus increasing the area likely to be productive to a corresponding depth. The future of the field appears to depend entirely on whether the seam will improve in quality followed down on the dip. The geological evidence shows that there is no probability of further seams occurring beneath the big or lower coal seam. There is no evidence of intrusive igneous rocks to disturb or detrimentally affect the seam, and, although the dip of the strata shows great changes it is probable that on the whole the seam to the south of Dingo Creek will not show great variation from the gentle dip noted as one in seven between No. 1 and No. 3 shafts, which would be favourable for working if the seam improved in quality. There seems some justification for thinking the seam may improve in both quality and size in further following it down on the dip, apart from getting further from the influence of surface weathering, as in Oxley Creek it appears to be decidedly poorer in quality and smaller in size, although on account of the partly hidden outcrops this evidence is not absolutely conclusive.

On account of the distance from a railway the seam could not, of course, be worked until a light railway or tramline afforded cheaper transport. Mining timber (ironbark) could be easily secured in the area, but the water supply is uncertain. Small waterholes both in Dingo Creek and Oxley Creek appear to last through protracted drought periods, but at such times are apparently unfit for human consumption.

The coal sampled near the surface is, on account of its high ash content, too inferior to attempt to work at the present time. It is, however, not so inferior that it should discourage any efforts to ascertain whether it improves in quality, particularly in the case of a seam showing such a workable thickness of coal as this, from 7 to 8 ft.

The cheapest way to prove this is by drilling, in which it will be necessary to secure the complete cores, so that the coal may be analysed and tested as to its coking properties.

There are difficulties to be faced in this work owing to the topography, as already noted in this report. The coal is dipping beneath a continuous sandstone wall 300 ft. high, which is a buttress of the White Mountains, which cover the coal to the south of Dingo Creek. Boring would have to be done in the creeks or gorges which cut through the sandstone cliffs, and this necessity restricts the suitable sites for boring to small areas on the field. The water supply has to be considered,

but, particularly after the wet season—from March onwards for a few months—little difficulty in this regard should be encountered.

It is suggested that two diamond drill bores be put down to intersect the seam at a depth of about 200 ft. Assuming that the dip under the sandstone cliffs remains the same as in Dingo Creek (one in seven), the distance of the drilling sites

Fig. 6.

Steeply Dipping Sandstones.
In the Creek, Lying Above the Coal Seams.

from the outcrops should be from 450 yards to 500 yards on the line of dip. A suitable site for one bore could be obtained in Dingo Creek about that distance upstream from No. 2 shaft. A complementary bore is desirable to test the seam on the dip below No. 6 outcrop. Owing to the sandstone cliffs an ideal location is imposssible here. This will necessitate the bore being put down in a gorge opening into Oxley Creek below the junction of Dingo Creek if water is available, if not, the only alternative site appears to be on the eastern side of Oxley Creek below Dingo Creek, where water is obtainable.

These two bores are regarded as necessary preliminary prospecting work only. If the coal cores obtained show after testing that the seam is not diminishing materially in thickness,

and that the quality of the coal is sufficiently good to meet the railway, smelting, and steaming demands of North Queensland, further expenditure would well be justified.

If these preliminary bores do not show the hoped-for improvement in the quality of the seam, further prospecting work is not recommended.

As, however, the locality is approximately 50 miles from the railway and the coal could not be worked without a light railway or tramline for transport, it would be necessary, assuming the initial prospecting bores give satisfactory evidence as to the quality and size of the seam, to prove that sufficient quantities of workable coal exist to justify the expenditure on such a line. This could only be done by first having a topographical survey of the area made and then a series of bores put down in selected sites to test the thickness and quality of the seam, in order that data would be provided for making a reliable estimate of the potentialities of the area as regards coal production.

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